

MODIS Technical Team Meeting
Thursday, October 11, 2001
Building 33, Room E125
3:00 pm

Vince Salomonson chaired the meeting. Sol Broder, Mark Domen, Barbara Conboy, Dorothy Hall, Ed Masuoka, Eric Vermote, Wayne Esaias, Steve Kempler, and Chris Justice attended. Rebecca Lindsey took the minutes.

1.0 Upcoming Events

- MODIS Science Team Meeting, BWI Marriott December 17-19, 2001

2.0 Meeting Minutes

2.1 Instrument Update

Mark Domen reported that Aqua thermal vacuum tests ended on Wednesday, October 10. The spacecraft should come out of chamber on Saturday, and some additional testing will be conducted. One major problem was seen with MODIS: command processor (CP) resets on A-side processor. Traditionally, resets have occurred at temperatures of -18°C and lower, which we always considered acceptable, since that temperature is not where MODIS would be operating. But during this test, we were getting resets at -2°C and lower, which is in the middle of the expected operational range.

When the craft gets moved out of the environmental chamber area, they will have to investigate ways to repair the instrument so the resets do not keep happening. The team investigating the issue believes they have a solution that involves changes to the CP-A circuit cards, and they will test their ideas on the engineering model at Santa Barbara Remote Sensing (SBRS) in the next week or two. He reported that they expect in the near future to pull the cards, take them to SBRS and have them repaired. It will be a matter of modifying the cards, not exchanging them, requiring a change to the chip.

Salomonson asked if the changes were of the same magnitude of effort as the gain changes previously made on Aqua. Domen felt these changes would be more challenging because whereas for the gain changes, the cards were easily accessible in the FAM circuit box, the CP circuit cards are in the main electronic module (MEM), which is more difficult to access. Thermal vacuum tests would not be repeated, so there is a risk involved with making the changes.

Since the formatter processor is identical to the command processor, with some different auxiliary circuitry, he reported that many believe that the formatter resets experienced on orbit with Terra MODIS are of the same type as the CP resets happening to Aqua MODIS in thermal vacuum tests. This suggests that there is a generic problem with the cards we have to deal with for both the formatter and the CP. If it is generic, the resets could happen to A-side and/or B-side formatters or CPs.

Domen said that some would like to change all four cards at the same time, but one risk is if we don't repeat thermal vacuum tests and verify that the changes are effective, we

might have “fixed” all cards in a way we might regret. Others think we should fix both formatter and CP cards on A-side only, and leave B-side cards alone. In addition to the risks of changing all four cards without testing the results, there is also the fact that the problem has never been demonstrated at the card or MEM level. It only showed up in the completed instrument at system level testing. So they cannot be 100% certain the cards are the problem; it could be noise in the total system circuitry. Potentially, then, there may not even be a problem for B-side cards.

Esaias wondered if maybe the B-side cards should be fixed instead, since the B-side is the only electronics side with acceptable noise. Domen said he had been told Aqua is superior to Terra on A- and B-side. He said that issues of which cards to modify are still to be resolved.

Finally, Domen said that there are liens against the March 24, 2001 launch date for spacecraft hardware—some boxes that need to be repaired. Some placeholder dates exists in the schedule for that. MODIS is the only instrument that requires a rework. They will try to meld schedules of MODIS into spacecraft effort to prevent delays.

2.2 GES DAAC Data Processing

Kempler reported that they estimate that the DAAC will be done processing all four reprocessing months and the forward processing months by December 21, completing the consistent-year. This factors in the 2x-reprocessing rate they have been seeing and some downtime. They are 18 days behind real time. He is going to calculate that parameter based on having 98% completion or better. Gary Alcott estimates that they need 1.94x rate to finish by December 21. Kempler reported that they are going down for power on Saturday, October 13. EDOS will capture but be unable to process until they come back up. Kempler also commented that they have coordinated with Miami to receive and archive the products that Miami is making from the direct broadcast data. Esaias said this would be a subset of the most important parameters.

Salomonson said he heard more reports of users having difficulty with the EDG. Kempler said each of these issues should be put in writing and sent to EDG user services. Hall said the lack of browse is still a major issue. Salomonson said he has heard that Mike Moore is heading up a Data Access Working Group, looking at these issues. Salomonson asked whether Kempler was aware of data tools developed by Louis Gonzalez called Msphinx and HDF-look that allow quick analysis and browse of MODIS data. Kempler reported that those tools were being integrated at the DAAC.

2.3 MODAPS Data Processing

Masuoka reported that MODAPS would be down for a power outage. Down time will be a minimum of 6 hours, but possibly as many as 48. They will take production down at 5 am on Saturday. On October 23, there is an interim readiness review for Aqua for the DAACs. MODAPS will be included in that as well. He will do a thirty-minute presentation on MODAPS readiness.

Kempler said that the team should know that ECS is putting some pressure on him to distinguish what is launch *critical* and launch *essential*. Critical means you can't pass launch readiness review without showing readiness in that area. There is the issue of the DAAC's current use of Aqua hardware for Terra reprocessing. Since we can't really designate Terra reprocessing as an Aqua launch critical component, then we may have to accept that Terra reprocessing will be compromised after Aqua launches.

Masuoka raised the issue of whether MCST has processed Aqua thermal vacuum test data. For Terra, we saw things like bit flip in the thermal vacuum tests, and we didn't fully appreciate the significance. He suggested we might want to check those kinds of things out with the Aqua tests.

With respect to processing, they have finished the week through day 264 (September 21, 2001) on mtvs1. He closed day 259 at 95% coverage because it was going to be a while before they could fill in the EDOS holes. On mtvs2, they have closed through day 320 of 2000 (11/15/00) and most of the way through the next week.

The team discussed the issue of when to consider a day complete enough to move on. Vermote suggest that we could consider on a case-by-case basis what would be missing and whether it would be crucial. Esaias suggested that he would consider being very relaxed with this first pass, e.g. he would accept 25% missing data after waiting for ten days. Otherwise we might never see the weeklies. Eric said that such large gaps would not affect the weekly composite if, for example, the missing data were over the Sahara, but would be more significant in the rainforest region, where it sometimes takes all eight days in a compositing period to get one clear granule. Hall said that one could miss a snowstorm if a whole day were missed. Broder commented that he had heard from the Atmosphere group that there was some concern about closing the day at 95%. For example, leaving MOD 07 with only 271 granules might propagate into their higher-level products. They were concerned. Esaias said the alternative would be not getting the weeklies.

The missing dailies could be reprocessed, but the weeklies could not feasibly be done over to incorporate the missing data when it became available. Masuoka said that they will continue to try to close at no less than 98% coverage, but they would like the option of closing at less complete coverage than that if waiting puts them into a bad spot with tape retrievals for example. Salomonson suggested that for now, Masuoka inform the tech team when such a decision needs to be made, and they will decide at the meeting

Masuoka stated that they are changing out some of their fiber optic routers with SCSI cables, trading speed for stability.

2.4 Cryosphere Update

Hall reported that they have 14 of their 5-km, 8-day CMG products available on the web as HDF and flat binary. The products are from October 31, 2000, through June 9, 2001. They will continue to add to the available products. Hall showed an image created by George Riggs using data from the Wisconsin Direct Broadcast system and code written

by Riggs. The image was of a snowstorm that happened on the previous day. They are going to start putting examples like the image on their web site. She told Masuoka that their new CMG code delivery is only expected to be applied to forward processing, not the reprocessing stream.

2.5 Land Update

Vermote reported that he started the analysis of Itwk/vdet settings, and the “good news” from an instrument stability point of view is that tested setting doesn’t recover the detector in Band 5 that was out of family. So, he will not be recommending changes on that basis. Additional analysis is needed to determine the effect on other characteristics.

2.6 Oceans Update

Esaías reported that users could now order 36-km means and QA files from their page. We had a meeting with the DAAC about improving ordering, perhaps having a shopping cart approach, that can be filled with various parameters. He also reported that they are continuing to work with Lindsey on making some global ocean images in Hammer-Aitoff projection for the revised MODIS brochure.

2.7 General Discussion

Salomonson asked Esaías to provide him with some slides with the new Ocean images to be used at IWG and said good representative images are solicited from all the Science Team. Justice asked if Salomonson knew how long he would have for presenting at IWG. Salomonson said he initially didn’t even have his own slot, but has since been allotted one, but was unsure how long (probably 30 minutes). There is no other time allotted for MODIS. Any Science Team members coming are encouraged to bring posters if they can and are willing. There undoubtedly will be space on which to place the posters. He intends to focus his presentation on three issues: the demonstrated capability of MODIS to produce exciting products, the progress on data processing in terms of producing products, and the progress and challenges for users having user-friendly access to the products. Esaías wondered if he should say something about the impact of budget cuts on Aqua science.

We are still planning 17-19 December for science team meeting. The general objectives of the Science Team meeting will be defined soon so that Science Team members can plan appropriately.

The final point of discussion was the 533 financial reports. Salomonson has been working with Teresa Mautino and Conboy to determine what team members need funding. It was originally thought that all team members had enough funding to get them through October. Based on recent reporting, this perception was way off. This is a critical time, and people really need to get these 533s accurate. On normal years, there is margin for error, but now with budgets tightening and the schedule for “recompetition” uncertain, the importance of 533s being as accurate and timely as possible is crucial. Conboy corroborated that some of the 533s are not being submitted and others are inaccurate. Financial reports are due the 15th of each month. These reports should include actual

costs for the prior month with planned costs for the next two months. Planned costs should truly reflect what the actual costs would be.

Masuoka commented that he has received the most recent version of the MODIS blue marble from Reto Stockli in Switzerland. MODAPS has been pushing him data with which to make the visualization. He said he thought Salomonson might want it for his IWG presentation.

3.0 Action Items

3.1 Discipline leads to meet to resolve the issue of beta-release code and science-quality code, and what we need to say about it.

Status: Open.

3.2 Technical team to discuss further the issue of predicted ephemeris data and how to improve it.

Status: Open.